

thiza. In some cases the distance between the commencement of the tunnel and the lip of the egg chamber is as much as 40 mm and may be more, whilst the internal diameter of the tunnel is often 20 mm and less. I find it difficult to accept the contention that a bird could "eject" an egg upwards with sufficient force to propel it into the egg chamber of such nests. Likewise I find it difficult to accept that a cuckoo could so contort its body as to allow it to gently deposit an egg in such a chamber and yet keep its wings and tail outside the nest.

(b) The smaller cuckoos and most of their hosts, particularly warblers and thornbills, lay eggs with shells that are fragile and easily dented, cracked or broken. One of these eggs dropped on another from as low as 15 mm or 20 mm will frequently cause a dent in the shell of one or the other. A cuckoo's egg "ejected" into a nest would almost certainly cause a dent in any egg if struck when landing or coming to rest or receive damage to itself, yet it is a rare occasion when one finds any of the eggs in a nest parasitised by a cuckoo, other than the Channel-billed Cuckoo (*Cythrops novaehollandiae*) in a damaged state.

In presenting these two facts I am not rejecting the possibility that cuckoos may at times deposit eggs in dome-shaped nests by the method described by Hill, but I do feel that this method could only be used on domed nests with short horizontal entrance tunnels or with side entrances without tunnels, such as those constructed by the members of the genus *Malurus*. In actual fact two of the most common hosts to our smaller cuckoos are the various members of the genus *Gerygone* and *Acanthiza*.

Finally, it is usual, in fact almost invariable practice for cuckoos, at least in Australia, to remove one of the eggs of the foster species from the nest, either before or after deposition of their egg. If this were not so, one would expect to frequently find *Acanthiza* nests with four and five eggs, including a cuckoo's egg, or *Gerygone* nests with four eggs including a cuckoo's egg and so on, whereas such findings are indeed uncommon. To remove an egg from a nest a cuckoo must of necessity enter the nest, at least partially, to enable it to pick up an egg and remove it. In addition, the cuckoo removes the egg some distance from the nest, not simply dropping it beneath the nest. If they are capable of lifting a host's egg from the nest and carrying it away, I see no reason to doubt that they could not or would not place their own egg into the nest in a similar manner.

—GORDON R. BERULDSSEN, Kenmore, Queensland.

EXCURSIONS

PENGUIN ISLAND, SAFETY BAY

On May 4th and 5th, 1972, members of the Western Australian Naturalists' Club held an excursion to Penguin Island, during which an ecological survey of the island's plants was made. Not all those taking part had done any type of ecological recording before. Therefore the two exercises that were completed were intended to introduce members to some of the methods that can be used.

On May 4th, 14 members made a belt transect of the island from east to west across the highest point. All plants within a square metre of the tape were recorded, and the height above sea level was also measured.

On May 5th, seven people took part in a general survey of the island (excluding the bird sanctuary, as it was thought that it would cause too much disturbance to the nesting gulls). The survey was accomplished by spreading out in a line across the island and, when in position, each observer recorded all the plants visible within a 10 ft. radius of where he stood. The whole line moved forward for 50 paces, halted, and recorded again. This manoeuvre was repeated a number of times until the southern cliffs were reached.

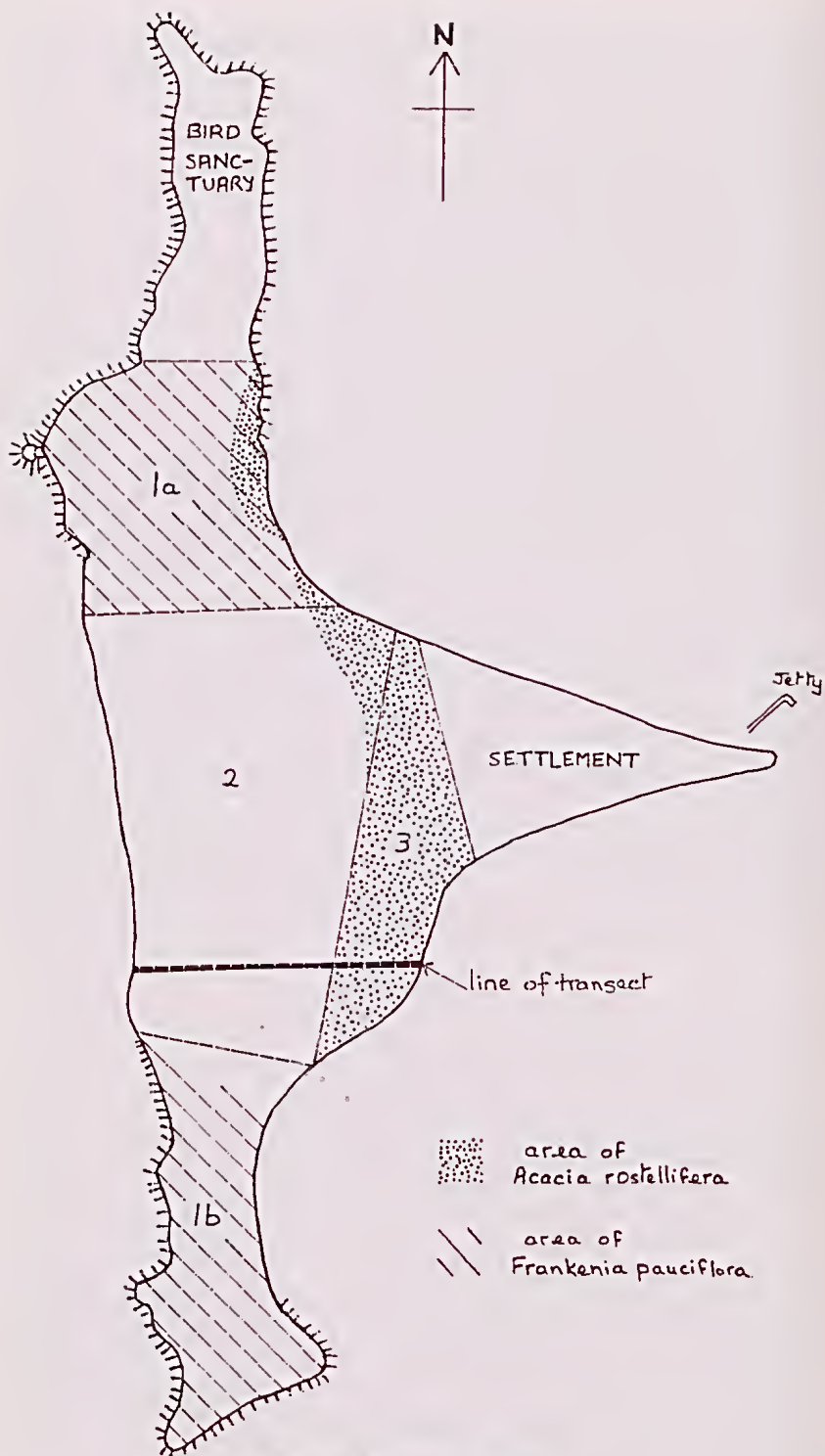


Fig. 1—Penguin Island.

PLANTS FOUND

SPINIFEX LONGIFOLIA
 SCIRPUS MODICUS
 LINDOSPHERA GLADIATUM
 PANTHERICUM DIVARICATUM
 ACANTHOCARPUS PREISSII
 CONOSTYLIS CANDICANS
 MUEHLENBERGIA ADPRESSA
 THALASSODIA BACCATA
 THALASSEODIA DIFFUSA
 CARPOMETUS AEGIALITIS
 TETRAPOGON ZEPHYRI
 CLEMATIS MICROPHYLLA
 ACACIA ROSTELLIFERA
 HRADEMBERGIA COMPTONIANA
 SPALDUM GLOBULOSUM
 ALYXIA BUXIFOLIA
 HYPOPORUM INSULARE
 SCAEVOLA CRASSIFOLIA

PROFILE

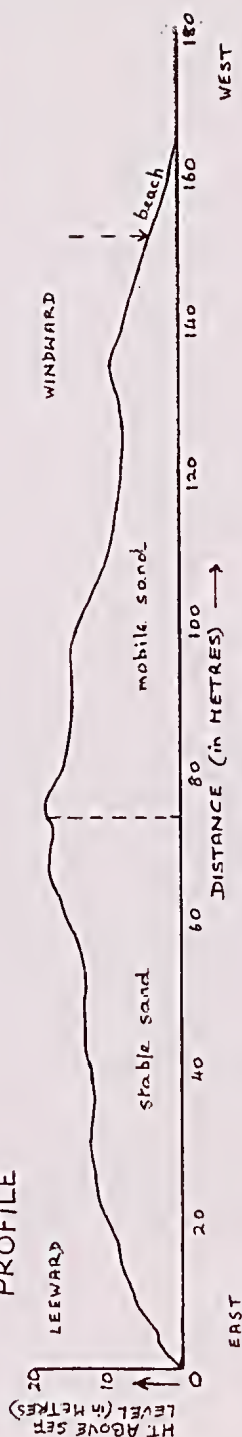


Fig. 2—Details of transect.

No record was made during either survey of annual grasses or herbs, since they were only just appearing above the ground and could not be determined accurately. Any shrubby plant that could not be identified on the spot was tagged and determined later with the aid of the Western Australian Herbarium.

Figure 2 shows the results of the transect. It illustrates the fact that some plants such as *Tetragonia zeyheri*, *Spinifex longifolia* and *Anthericum divaricatum* can exist in the harsh conditions of moving sand; while others, e.g. *Acacia rostellifera* and *Spyridium globulosum*, only grow in more sheltered areas. There are, of course, other factors which have not been considered, shade, for example.

The survey demonstrated very clearly the distribution of plants into various ecological niches. These have been described by G. M. Storr ("The flora of the Shoalwater Bay islands," *W. Aust. Nat.*, 8, 1961: 43-50). We were concerned with the three principal habitats:—

1. Level or gently sloping rock with a thin mantle of soil.
 - 1a. Northern part of the island.
 - 1b. Southern part of the island.
2. Windward slope of dunes.
3. Leeward slope of dunes.

Area 1 is divided into two portions, (a) north and (b) south, of very different appearance. To the north the shrubs are low and rounded, while in the south they are tall and more open in habit. The survey attempted to determine whether there were any definite differences between the flora of these areas.

The greatest variety of plants were found in area 2, with 23 different species recorded, none of which, however, were entirely restricted to this area.

Area 1 was the next in numbers, with 1a having 21 species and 1b, 18. Of these *Frankenia pauciflora* is confined to the area. Four species were found only in area 1a, and another one only in area 1b. They were: in 1a: *Salicornia* sp., *Pittosporum phylliraeoides*, *Wilsonia backhousei*, *Oxalis corniculata*. In 1b: *Calocephalus brownii*.

Area 3 had the densest plant cover but the lowest total of species, 16. Six of them, however, were confined to this area; *Conostylis candicans*, *Clematis microphylla*, *Cassytha racemosa*, *Exocarpos aphyllus*, *Myoporum insulare* and *Helichrysum cordatum*.

The most interesting problem concerns the differences in flora between areas 1a and 1b. The soil slope and composition, as well as the presence of ground-nesting birds, could all be having an effect.

Plants not included in Storr (1961) as growing on the island are:—

SANTALACEAE

Exocarpos aphyllus R.Br. shrub growing in *Acacia rostellifera* scrub.

FABACEAE

Hardenbergia comptoniana (Andr.) Benth. climber, on dunes.

A large grey seed was found among the wreck at high tide line on the Shoalwater Bay side of the island. It proved to be *Caesalpinia bonduc*, a pantropical plant. It is interesting to speculate whether it drifted here from the Kimberleys, Indonesia or even further afield!

—PENNY HUSSEY.